DEPARTMENT OF THE ARMY
Omaha District, Corps of Engineers
6014 U.S. Post Office and Court House
Omaha, Nebraska 68102

MROED-AK 22 February 1977

Memorandum
No. 1110-2-1

ENGINEERING AND DESIGN

Preparing and Maintaining As-Built and Operational Drawings

1. **Purpose**. This memorandum prescribes project and district office procedures for preparing and maintaining as-built contract drawings for Civil and Military projects and operational drawings for Civil Works projects containing features subject to continuing changes.

2. **Applicability**. This memorandum is applicable to all elements of the Omaha District.

3. **References**.

   a. AR 34-18-15, (Files No. 1515-13, 1518-01 and 1520-03).

   b. ER 1110-2-1200, Paragraph 20.

   c. Federal Power Commission "Regulations to Govern the Preservation of Records of Public Utilities and Licensees," effective 12 December 1962 (Records retention Items 27, 28 and 29).

   d. MRD-R 1130-2-4.

4. **Definitions**. a. **Drawing**. Within the meaning of this memorandum, a drawing is any construction diagram, layout or graphic illustration, whether produced by ink or pencil, or any reproduction intermediary made therefrom.

   b. **Original Drawing**. A basic manually produced, ink or pencil construction diagram, layout or graphic illustration which is usually produced on transparent paper. An original drawing may also be some reproduction process copy made from another drawing and upon which additional specific information has been added to distinguish the copy as displaying new original information.

   c. **Reproducible**. Any print or similar graphic product produced by chemical or photographic methods on transparent paper, cloth, foil, or Mylar, to reproduce additional copies of an original drawing. A reproducible may be made front or reverse reading.

This Memorandum rescinds DR 1110-2-1 dated 14 October 1970.

d. **Microfilm Negative**. A film negative such as 35 mm or 105 mm made from a full-size drawing. It is used as an intermediate for making full- or half-size projection prints and may also be used for reference viewing or for permanent record. The 35 mm film negatives may be mounted in standard aperature cards.

e. **Projection Print**. (Blowback). A print made by projecting any film negative, such as a 35 mm or 105 mm film negative, to photosensitive material. Projection prints may be half- or full-size, front or reverse reading and they may be made on transparent paper, cloth or Mylar.

f. **Contract Drawing**. A drawing which is issued for a specific contract and which shows all corrections and modifications issued by amendment to that contract. Additional contract drawings may be issued to modify a contract.

g. **Construction Drawing**. A drawing prepared by either the contractor or Government during the course of a construction contract in order to further develop or portray a phase of the construction work (such as electrical or mechanical system drawings) or to coordinate the various phases of construction work (such as pour and lift drawings which also show embedded items).

h. **Shop Drawing**. A drawing prepared by a manufacturer or fabricator to show equipment assembly and fabrication details, wiring and piping diagrams, or other manufacturing details.

i. **As-Built Drawing**. A final drawing on which all design changes, factory or field changes, and deviations during construction are posted. Without such posting, the drawings would be in error when compared to actual conditions or construction in the field. "As-built Contract" drawings show only changes or deviations *covered by the particular contract* unless specifically noted on the drawing as "by others."

j. **Operational Drawing**. A drawing which reflects the composite as-built conditions of a facility upon completion of the various construction contracts, including all changes to the contracts, and which is up-dated from time to time to include subsequent facility changes accomplished under contract or by operating personnel. (Reproducibles of operational drawings will be utilized whenever practicable when preparing new drawings for contract or government force work so that the revisions after completion can be readily transferred to the original operational (composite) drawing. Each operational drawing therefore serves also as an engineering master drawing).

k. **Marked Print**. A print of the latest revised contract or operational drawing upon which field personnel have recorded all field changes and deviations during construction or operation. This marked print is transmitted to Drafting Section for use in preparing a contract as-built or operational drawing. A marked print is also used by Engineering personnel to transmit minor changes to field personnel who will return the prints with additional revisions, if any, for preparing or revising operational drawings. In general, blue pencil will be used for deletions when marking drawings and red pencil will be used for additions or corrections. Yellow pencil will normally indicate no change, that is, the line or note is acceptable as checked.

5. Procedures. a. **Contract Drawings**. Construction and supply contract drawings for a specific facility or group of facilities will be prepared in accordance with current regulations to show sufficient detail so that when used with applicable specifications, construction can be completed without drawing changes or additional drawings except as may be required to deal with unforeseen conditions encountered during construction, and then only to the extent necessary to support change orders to the contract. The foregoing is not to be construed as eliminating the necessity for shop drawings and construction drawings. Insofar as feasible, contract drawings will be designed to be usable as, or convertible to, operational drawings.

b. **As-Built Contract Drawings**. As construction progresses, all deviations in actual construction from contract drawings will be properly marked by contractor personnel on the latest prints of the contract, shop or construction drawings. Overlays or attached sketches will be utilized as necessary. These drawing revisions will be made in colored pencil as soon as practical in order that the changes can be indicated by personnel familiar with actual construction. Upon completion of construction for a specific contract, these marked prints will be forwarded from the Area Engineer through Construction Division to Drafting Section, Engineering Division. Drafting Section will revise the original contract drawing tracings, incorporating all changes shown on the marked-up prints to reflect as-built conditions. Obvious discrepancies or questionable items will be referred to engineers familiar with the original design for interpretation and technical adequacy. A 35mm film of all as-built drawings will be made and retained on permanent file in Drafting Section. The as-built tracings of Military Contract drawings and one set of 35 mm film will be transmitted to the applicable Army or Air Force Base. On Civil contracts, two new sets of full size as-built prints, the original marked-up field prints and the as-built tracings will be forwarded to the applicable Area Engineer.

c. **Operational Drawings**. As-built contract drawings for a specific facility do not necessarily reflect changes made under separate contracts to specific features, equipment, or systems and, therefore, do not truly represent the facility when it is in a fully completed operating status. For example, a switchyard for a power project may be designed and constructed under a specific contract. Subsequently additional bays may be required and are added to the original switchyard by a new and separate contract. Since neither the as-built contract drawings for the original switchyard, nor the as-built drawings for the additional work will necessarily show the entire switchyard, operational (new composite) drawings must be prepared reflecting the updated conditions as they actually exist for operating purposes, without changing as-built drawings under either contract. This is true for all features of a facility subject to continuing changes. Because of the foregoing difficulties, and in order to provide operation and maintenance personnel with adequate drawings the following procedures will be followed:

(1) Upon completion of a major facility, field personnel shall furnish up-to-date information on the actual conditions existing. This will be done by marking suitable prints in the same manner as for as-built contract drawings. This information will be furnished to the Drafting Section in logically correlated groups with priority given to most-needed drawings. Drafting Section will prepare a new master set of operational drawing originals (from the basic as-built drawings, if practical) utilizing permanent type of material for durability, such as Mylar. The master set of operational drawing originals will be retained in Drafting Section. One set of half-size prints will be furnished to Operations Division, one set to Missouri River Division, three sets to Engineering Division, and fifteen sets plus three sets of full size BW prints will be furnished to the appropriate field office. The Field Office will then be

responsible for maintaining these prints in an up-to-date status to permit Drafting Section to update the originals. These originals will be periodically updated by posting all post-construction changes, engineering changes, and additions by subsequent contracts. The end result will be operational drawings for each project which will reflect the composite, up-to-date status of all features, equipment, or systems.

(2) When it is not practical to modify as-built drawings to obtain adequate operational drawings, new drawings will be prepared by the best applicable means showing the desired information. These drawings will generally be prepared on paper and then reproduced on a permanent material for durability.

(3) When contract as-built drawings are clearly legible and of permanent quality, such drawings may be used for operational drawings originals providing new reproducibles are made for use as contract originals and substituted therefor, and providing the contract drawing numbers are immediately removed from the operational drawing originals. The operational drawings are completed by removing superfluous contract instructions, notes, etc., and then adding any additional field revisions and work covered by other contracts.

(4) A new basic original drawing will be prepared whenever there is not an existing drawing sufficiently legible or complete in details or scope.

(5) When a new composite drawing is required for use as a contract drawing, the basic original drawing will be prepared as an operational drawing and a reproducible thereof shall be used for the contract drawing.

(6) Operational drawings will be assigned new file numbers in accordance with paragraph 6 below. Title will be revised to conform to updated conditions.

(7) Operational drawings have no legal significance and therefore will not carry signatures. In order to facilitate the use of operational drawing reproducibles for design and contract purposes, the title block shall carry only the drawing number, the month and year of issue, and the initials of the persons by whom it has been designed, or drawn. Operational drawings will never be used directly as contract drawings. Instead, a reproducible will be obtained, initials and date removed, a contract series number assigned to replace the 3-digit “OPN” series designation, and then the reproducible signed in the routine matter for contract drawings.

(8) Operational drawings are permanent in nature, and will be updated as features, equipment, or systems are changed during operations and maintenance of the project. There are no restrictions to the number of changes which can be made to operational drawings. Only the last change shall be indicated in the revision block and dated. Each change shall also be indicated in the title block by a change in the decimal point number of the drawing.

6. **Operational Drawing Numbering System** a. **File number**. The drawing file number system used for Operational drawings will conform to the system in use for all Civil Works Projects in the District. Drawing numbers will be assigned by the Drafting Section. Under this system the file number consists of six symbols, briefly explained on Appendix A, attached. A complete manual

describing in full the foregoing system is available for review and/or reference in the Drafting Section.

b. **Sub-Category Numbers**. Prior to assigning a specific drawing number for any operation drawing, a tabulation of all drawings for each type of work at each location will be made. The drawings will be arranged in logical groups or sub-categories established for powerplant and switchyard electrical drawings to facilitate uniformity of numbers and rapid identification. Similar tabulations will be prepared by Sections responsible for Civil, Mechanical, Architectural and Structural drawings.

7. **Funding.** The preparation and revisions of operational drawings will be a continuing program and generally will be programmed under O&M funds. The amount of funds required each year will be a joint determination of Operations Division, and Drafting Section and Design Branch of Engineering Division. This information will be furnished to the Program Development Branch, which will be responsible for requesting and programming the funds.

2 Incls
App A
App B

Distribution
A
B

APPENDIX A

Operational Drawing Numbering System

The drawing file number system used for Operational drawings will conform to the system in use for all Civil Works Projects in the District. Drawing numbers will be assigned by the Drafting Section. Under this system the file number consists of six symbols, briefly explained as follows:

M	R	OPN	8	3	E	201.3	Typical File Number Symbols
A	b	c	d	e	f	g	

Each symbol indicates an item of information about the drawing in accordance with the following:

a. **Location:** "M" indicates Missouri River.

b. **Project:** (Partial Listing).

G Gavins Point	B Big Bend	GR Garrison
R Fort Randall	O Oahe	FP Fort Peck

c. **Contract Drawing Series Number or Use Symbol –** in this case the symbol will consist of three capital letters "OPN," indicating the drawing is an operational drawing.

d. **Structure of Feature** (Partial Listing)

30	General	70	Concrete Dam
40	Earth Dam	80	Powerplant
50	Spillway	90	Switchyard
60	Outlet Works	110	Permanent Townsites and Miscellaneous Buildings

e. **Category or Craft**

0	General and Index	5	Miscellaneous Iron and Embedded Items
1	Civil	6	Structural Steel
2	Mechanical	7	Piping, Heating and Ventilating
3	Electrical	8	Sewer and Water
4	Architectural		

f. **Drawing Size**

A – 8 ½" x 11"	B – 11" x 17"	C – 14" x 20"	E – 28" x 40"

g. **Sheet Number Symbol and Revision Number –** in this case the symbol consists of three numerals, "201" indicating the drawing is 1st in sequence of a group showing the same type features and information. The sheet number symbol is followed by a decimal point and a numeral, in this case "3" indicating that three revisions have been made to the drawing.

APPENDIX B

SPILLWAY

52E101 – General Arrangements (Miscellaneous)
52E201 – Spillway Gates
52E301 – Spillway Gate Hoist
52E401 – Unassigned
52E501 – Monorail Cranes
52E601 – Spillway Hoist Car
52E701 – Stop Log and Ice Skimmer
52E801 – Unassigned
52E901 – Boat Barricade

53E101 – General Arrangement
53E201 – Lighting
53E301 – Wiring Diagram
53E401 – Connection Diagram
53E501 – Conduit and Grounding
53E601 – Cable and Conduit Schedules
53E701 – Switchgears
53E801 – Unassigned
53E901 – Unassigned

57E101 – Compressed Air System
57E201 – Spillway Gate Bubbler Air System
57E301 – Diesel Generator
57E401 – Struct. Drainage and Unwatering Pumps
57E501 – Miscellaneous Piping
57E601 – Unassigned
57E701 – Heating and Ventilating
57E801 – Unassigned

INTAKE STRUCTURE
OUTLET WORKS
REGULATING GATE STRUCTURE
SURGE TANKS

61E101 – Intake Structure – Concrete and Reinforcement
61E201 – Unassigned
61E301 – Outlet Works – Concrete and Reinforcement
61E401 – Unassigned
61E501 – Regulating Gate Structure – Concrete and Reinforcement
61E601 – Unassigned
61E701 – Surge Tanks – Concrete and Reinforcement
61E801 – Unassigned
61E901 – Penstocks – Concrete and Reinforcement
61E1001 – Unassigned
61E1101 – Emergency Control Shaft Buildings – Concrete and Reinforcement
61E1201 – Unassigned
61E1301 – Control Shaft Buildings – Concrete and Reinforcement
61E1401 – Unassigned
61E1501 – Substation Building – Concrete and Reinforcement
61E1601 – Unassigned

62E101 – Intake Structure – General Arrangement (Misc.)
62E201 – Intake Structure – Intake Gates
62E301 – Intake Structure – Intake Gates Hoist
62E401 – Intake Structure – Stop Logs and Bulkhead Gates
62E501 – Intake Structure – Intake Emergency Gate Hoist
62E601 – Intake Structure – Unassigned
62E701 – Intake Structure – Gantry Crane
62E801 – Intake Structure – Bridge Crane
62E901 – Intake Structure – Jib Hoist
62E1001 – Intake Structure – Trash Racks
62E1101 – Intake Structure - Elevators
62E1201 – Intake Structure – Diesel Generator
62E1301 – Intake Structure – Shop Equipment
62E1401 – Intake Structure – Unassigned
62E1501 – Outlet Works – General Arrangement
62E1601 – Outlet Works – Outlet Gates (Service, Regulating Emergency)
62E1701 – Outlet Works – Outlet Gate Hoist
62E1801 – Outlet Works – Gantry Crane
62E1901 – Outlet Works – Stop Logs and Bulkhead Gate
62E2001 – Outlet Works – Diesel Generator
62E2101 – Outlet Works – Miscellaneous
62E2201 – Outlet Works – Unassigned

62E2301 – Regulating Gate Structure – General Arrangement (Misc.)
62E2401 – Regulating Gate Structure – Regulating Gates
62E2501 – Regulating Gate Structure – Regulating Gate Hoist
62E2601 – Regulating Gate Structure – Stop Logs
62E2701 – Regulating Gate Structure – Unassigned
62E2801 – Surge Tanks and Risers – General Arrangement (Misc.)
62E2901 – Surge Tanks and Risers – Monorail Crane
62E3001 – Surge Tanks and Risers – Unassigned
62E3101 – Emergency Control Shaft Buildings – General Arrangement
62E3201 – Emergency Control Shaft Buildings – Emergency Control Gates
62E3301 – Emergency Control Shaft Buildings – Emergency Cont. Gate Hoist
62E3401 – Emergency Control Shaft Buildings – Unassigned
62E3501 – Control Shaft Buildings – General Arrangement (Misc.)
62E3601 - Control Shaft Buildings – Main Control Gates
62E3701 - Control Shaft Buildings – Main Control Gate Hoists
62E3801 - Control Shaft Buildings – Bridge Crane
62E3901 - Control Shaft Buildings – Unassigned
62E4001 – Substation Building – General Arrangement
62E4101 – Substation Building – Monorail Crane
62E4201 – Substation Building – Diesel Generator
62E4301 – Substation Building – Unassigned

63E101 – Intake Structure – General Arrangement
63E201 – Intake Structure – Lighting
63E301 – Intake Structure – Wiring Diagrams
63E401 – Intake Structure – Connections Diagrams
63E501 – Intake Structure – Conduit and Grounding
63E601 – Intake Structure – Cable and Conduit Schedules
63E701 – Intake Structure – Switchgears
63E801 – Intake Structure – Unassigned
63E901 – Intake Structure – Unassigned
63E1001 – Outlet Works – General Arrangement
63E1101 - Outlet Works – Lighting
63E1201 - Outlet Works – Wiring Diagrams
63E1301 – Outlet Works – Connection Diagram
63E1401 - Outlet Works – Conduit and Grounding
63E1501 - Outlet Works – Cable and Conduit Schedules
63E1601 - Outlet Works – Switchgears
63E1701 - Outlet Works – Unassigned
63E1801 - Outlet Works – Unassigned

63E1901 – Regulating Gate Structure – General Arrangement
63E2001 - Regulating Gate Structure – Lighting
63E2101 - Regulating Gate Structure – Wiring Diagrams
63E2201 - Regulating Gate Structure – Connection Diagrams
63E2301 - Regulating Gate Structure – Conduit and Grounding
63E2401 - Regulating Gate Structure – Cable and Conduit Schedules
63E2501 - Regulating Gate Structure – Switchgears
63E2601 - Regulating Gate Structure – Unassigned
63E2701 – Surge Tanks – General Arrangement
63E2801 – Surge Tanks – Lighting
63E2901 – Surge Tanks – Wiring Diagrams
63E3001 – Surge Tanks – Conduit and Grounding
63E3101 – Surge Tanks – Unassigned
63E3201 – Penstocks – General Arrangements
63E3301 – Penstocks – Lighting
63E3401 – Penstocks – Wiring Diagrams
63E3501 – Penstocks – Connection Diagrams
63E3601 – Penstocks – Conduit and Grounding
63E3701 – Penstocks – Switchgear
63E3801 – Penstocks – Unassigned
63E3901 – Penstocks – Unassigned
63E4001 – Emergency Control Shaft Bldgs. – General Arrangements
63E4101 - Emergency Control Shaft Bldgs. – Lighting
63E4201 - Emergency Control Shaft Bldgs. – Wiring Diagram
63E4301 - Emergency Control Shaft Bldgs. – Connection Diagrams
63E4401 - Emergency Control Shaft Bldgs. – Conduit and Grounding
63E4501 - Emergency Control Shaft Bldgs. – Cable and Conduit Schedules
63E4601 - Emergency Control Shaft Bldgs. – Switchgears
63E4701 - Emergency Control Shaft Bldgs. – Unassigned
63E4801 - Emergency Control Shaft Bldgs. – Unassigned
63E4901 – Control Shaft Bldgs. – General Arrangement
63E5001 – Control Shaft Bldgs. – Lighting
63E5101 – Control Shaft Bldgs. – Wiring Diagrams
63E5201 – Control Shaft Bldgs. – Connection Diagrams
63E5301 – Control Shaft Bldgs. – Conduit and Grounding
63E5401 – Control Shaft Bldgs. – Cable and Conduit Schedules
63E5501 – Control Shaft Bldgs. – Switchgears
63E5601 – Control Shaft Bldgs. – Unassigned
63E5701 – Control Shaft Bldgs. – Unassigned
63E5801 – Substation Bldg. – General Arrangement
63E5901 – Substation Bldg. – Lighting

63E6001 – Substation Bldg. – Wiring Diagram
63E6101 – Substation Bldg. – Connection Diagrams
63E6201 – Substation Bldg. – Conduit and Grounding
63E6301 – Substation Bldg. – Cable and Conduit Schedules
63E6401 – Substation Bldg. – Switchgears
63E6501 – Substation Bldg. – Unassigned
63E6601 – Substation Bldg. – Unassigned

67E101 – Intake Structure – Compressed Air Systems
67E201 – Intake Structure – Intake Gate Seal Air System
67E301 – Intake Structure – Intake Bubbler Air System
67E401 – Intake Structure – Unassigned
67E501 – Intake Structure – Raw Water
67E601 – Intake Structure – Fire Protection
67E701 – Intake Structure – Unassigned
67E801 – Intake Structure – Drainage System
67E901 – Intake Structure – Unassigned
67E1001 – Intake Structure – Miscellaneous Piping
67E1101 – Intake Structure – Unassigned
67E1201 – Intake Structure – Heating, Ventilating and Air Conditioning
67E1301 – Intake Structure – Unassigned
67E1401 – Outlet Works – Air System
67E1501 – Outlet Works – Outlet Gate Seal Air System
67E1601 – Outlet Works – Hydraulic System
67E1701 – Outlet Works – Unassigned
67E1801 – Outlet Works – Heating and Ventilating
67E1901 – Outlet Works – Unassigned
67E2001 – Regulating Gate Structure – Gate Seal Air System
67E2101 – Regulating Gate Structure – Drainage System
67E2201 – Regulating Gate Structure – Miscellaneous Piping
67E2301 – Regulating Gate Structure – Heating and Ventilating
67E2401 – Regulating Gate Structure – Unassigned
67E2501 – Surge Tanks – Bubbler Air System
67E2601 – Surge Tanks – Miscellaneous Piping
67E2701 – Surge Tanks – Tank Base Heating and Ventilating
67E2801 – Surge Tanks – Miscellaneous
67E2901 – Surge Tanks – Unassigned
67E3001 – Penstocks – Ventilating System
67E3101 – Penstocks – Unassigned
67E3201 – Emergency Control Shaft Buildings – Compressed Air System

67E3301 – Emergency Control Shaft Buildings – Unassigned
67E3401 – Emergency Control Shaft Buildings – Unassigned
67E3501 – Control Shaft Buildings – Unassigned
67E3601 – Control Shaft Buildings – Unassigned
67E3701 – Control Shaft Buildings – Unassigned
67E3801 – Substation Building – Compressed Air System
67E3901 – Substation Building – Heating System
67E4001 – Substation Building – Unassigned

68E101 – Intake Structure – Treated Water System
68E201 – Intake Structure – Sanitary System
68E301 – Intake Structure – Unassigned
68E401 – Outlet Works – Treated Water System
68E501 – Outlet Works – Sanitary System
68E601 – Outlet Works – Unassigned
68E701 – Control Shaft Buildings – Treated Water System
68E801 – Control Shaft Buildings – Sanitary System
68E901 – Control Shaft Buildings – Unassigned
68E1001 – Substation Building – Treated Water System
68E1101 – Substation Building – Sanitary System
68E1201 – Substation Building – Unassigned

POWER PLANT

82E101 – General Arrangements (Miscellaneous)
82E201 – Generators
82E301 – Generators
82E401 – Turbines
82E501 – Turbines
82E601 – Governor
82E701 – Butterfly Valve
82E801 – Unassigned
82E901 – Diesel Generators
82E1001 – Gantry Cranes
82E1101 – Bridge Cranes
82E1201 – Jib Hoist
82E 1301 – Unassigned

82E1401 – Elevators
82E1501 – Unassigned
82E1601 – Shop Arrangements
82E1701 – Unassigned
82E1801 – Motor Operated Doors
82E1901 – Water Tight Doors
82E2001 – Draft Tube Gates and Stop Logs

83E101 – General Arrangement (Misc.)
83E102 – Lighting
83E301 – Wiring Diagrams (General)
83E401 – Connection Diagrams
83E501 – Conduit and Grounding Plans, Elevations and Details
83E601 – Unassigned
83E701 – Unassigned
83E801 – Unassigned
83E901 – Main Switchboards Arrangement and Wiring
83E1001 – Unassigned
83E1101 – Unit Control Boards Arrangement and Wiring
83E1201 – Excitation and Voltage Regulation
83E1301 – Annunciation System
83E1401 – Medium Voltage Station Service Switchgear and Transformers (2, 3, 4.16, 13.8 KV)
83E1501 – Low Voltage Station Service Switchgear and Transformers (230 & 460 V)
83E1601 – Auxiliary Low Voltage Distribution Center (125V DC & 115, 230, 460V AC)
83E1701 – Generators and Appurtenances
83E1801 – Generator Leads and Unit Switchgear
83E1901 – Main Transformers and Appurtenances
83E2001 – Oil-filled Pipe Cable System
83E2101 – Unassigned
83E2201 – Emergency Generator and Switchgear
83E2301 – CO-2 Systems
83E2401 – Telephone and Code Call Systems
83E2501 – Carrier Current Systems
83E2601 – Leased Circuit Communication Diagrams

83E2701 – Radio Systems
83E2801 – Field Testing Equipment and Procedures
83E2901 – Flow Meter
83E3001 – Unassigned
83E3101 – Unassigned
83E3201 – Unassigned
83E3301 – Unassigned
83E3401 – Unassigned
83E5001 – Cable and Conduit Schedules
83E5101 – Cable and Conduit Schedules
83E5201 – Cable and Conduit Schedules
83E5301 – Cable and Conduit Schedules

85E101 – Miscellaneous Metals
85E102 – Unassigned

87E101 – Generator Brake and Hydraulic Systems
87E201 – Generator Thrust Bearing High Pressure Oil Systems
87E301 – Unassigned
87E401 – Turbine Grease System
87E501 – Insulating and Lube Oil Systems
87E601 – Unassigned
87E701 – Oil Filled Pipe Cable System
87E801 – Station Service Air System
87E901 – Governor Air System
87E1001 – Draft. Tube Depression Air System
87E1101 – Air Circuit Breaker Air System
87E1201 – Unassigned
87E1301 – Raw Water and Cooling Systems
87E1401 – Fire Protection, CO_2 and Water Systems
87E1501 – Unassigned
87E1601 – Unwatering and Station Drainage
87E1701 – Unassigned
87E1801 – Flow Meters and Piezometers
87E1901 – Miscellaneous Piping

87E2001 – Unassigned
87E2101 – Heating, Ventilating and Air Conditioning
87E2201 – Heating, Ventilating and Air Conditioning
87E2301 – Unassigned

88E101 – Treated Water System
88E201 – Unassigned
88E301 – Sanitary System
88E401 – Unassigned

SWITCHYARD

93E101 – General Arrangement
93E201 – Lighting and L.V. Power
93E301 – Wiring Diagrams (General)
93E401 – Connection Diagrams
93E501 – Conduit and Grounding
93E601 – Unassigned
93E701 – Oil Circuit Breakers
93E801 – Disconnect Switches
93E901 – Transformers
93E1001 – Instrument Transformer
93E1101 – Insulators and Misc. Bus Hardware

NOTE: Each group contains 99 drawing numbers (1-99) and should include sufficient spare numbers to allow for future additions.